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Patent Claims

1. An internal combustion engine having an exhaust gas recirculation device, the internal combustion engine (1) having two cylinder groups (19, 20), and it being possible for the exhaust gas from each cylinder group (19, 20) to be discharged separately via respective exhaust pipes (17, 18), a recirculation line (24) of the exhaust gas recirculation device branching off from one of the two exhaust pipes (17, 18) and opening out into the induction section (6) of the internal combustion engine (1), characterized in that the cylinder groups (19, 20) can be operated with an identical or different power output, and the recirculation line (24) of the exhaust gas recirculation device (23) branches off from the exhaust pipe (17) of the cylinder group (19) which can be operated with a higher power output in at least one operating point.

2. The internal combustion engine as claimed in claim 1, characterized in that the specific power of the cylinders of a cylinder group (19) differs from the specific power of the cylinders of the other cylinder group (20).

3. The internal combustion engine as claimed in claim 1 or 2, characterized in that the two cylinder groups (19, 20) comprise a different number of cylinders.

4. The internal combustion engine as claimed in one of claims 1 to 3, characterized in that the cylinder groups (19, 20) can be operated with different air/fuel ratios (λ_k, λ_g), and the recirculation line (24) of the

exhaust gas recirculation device (23) branches off from the exhaust pipe (17) of the cylinder group (19) which can be operated with a lower air/fuel ratio (λ_k) in at least one operating point.

5. The internal combustion engine as claimed in claim 4, characterized in that the cylinder group (19) which interacts with the exhaust gas recirculation device comprises a smaller number of cylinders than the second cylinder group (20) which is designed to be independent of the exhaust gas recirculation device.

6. The internal combustion engine as claimed in one of claims 1 to 5, characterized in that an exhaust gas turbine (3) of an exhaust gas turbocharger (2) is provided in the exhaust section (4), it being possible for the exhaust pipes (17, 18) of the cylinder groups (19, 20) to be fed to the exhaust gas turbine (3).

7. The internal combustion engine as claimed in claim 6, characterized in that the exhaust gas turbine is of two-flow (3) design, each exhaust gas flow (10, 11) of the exhaust gas turbine (3) being connected to a respective exhaust pipe (17, 18).

8. The internal combustion engine as claimed in claim 7, characterized in that the exhaust gas flows (10, 11) are designed to be of different sizes, the smaller exhaust gas flow (10) being connected to the exhaust pipe (17) which interacts with the exhaust gas recirculation device (23).

9. The internal combustion engine as claimed in one of claims 6 to 8, characterized in that the exhaust gas turbine (3) is equipped with a variable turbine geometry (8) in order to adjustably set the active turbine inlet cross section (12, 13).

10. The internal combustion engine as claimed in claims 7 and 9, characterized in that the variable turbine geometry (8) is arranged in the turbine inlet cross section (12, 13) of both exhaust gas flows (10, 11).

11. The internal combustion engine as claimed in claims 7 and 9, characterized in that the variable turbine geometry (8) is arranged in the turbine inlet cross section (12) of the exhaust gas flow (10) which interacts with the exhaust gas recirculation device (23).

12. A method for operating an internal combustion engine having an exhaust gas recirculation device, in particular for operating the internal combustion engine as claimed in one of claims 1 to 11, the internal combustion engine (1) having two cylinder groups (19, 20), and it being possible for the exhaust gas from each cylinder group (19, 20) to be discharged separately via a respective exhaust pipe (17, 18), a recirculation line (24) of the exhaust gas recirculation device (23) branching off from one of the exhaust pipes (17, 18) and opening out into the induction section (6) of the internal combustion engine (1), characterized in that the cylinder groups (19, 20) can be operated with an identical or different power output, and the cylinder group (19) whose exhaust pipe (17) is connected to the recirculation line (24) of the exhaust gas recirculation device (23) is operated with a variable power output.

13. The method as claimed in claim 12, characterized in that the cylinder groups (19, 20) can be operated with different air/fuel ratios (λ_k, λ_g), and the cylinder group (19) whose exhaust pipe (17) is connected to the recirculation line (24) of the exhaust

gas recirculation device (23) is operated with a variable air/fuel ratio (λ_k).

14. The method as claimed in claim 13, characterized in that the air/fuel ratio (λ_k) is reduced by increasing the proportion of fuel.

15. The method as claimed in one of claims 12 to 14, characterized in that different ignition points are set in the two cylinder groups (19, 20).

16. The method as claimed in one of claims 12 to 15, characterized in that different fuel injection profiles are set in the two cylinder groups (19, 20).

17. The method as claimed in one of claims 12 to 16, characterized in that the air/fuel ratio (λ_k) is reduced by reducing the proportion of air.